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[Reprinted from THE MEDICAL NEWS, February 18, 1893.]

SYMPHYSIOTOMY VERSUS ITS SUBSTITUTES; WITH THE REPORT OF A CASE OF SYMPHYSIOTOMY.¹

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THE revival of symphysiotomy is due to the genius of Morisani, of Naples; its introduction into the United States, to our distinguished Fellow, Dr. Robert P. Harris. Now that the results of symphysiotomy are known, as accomplished by the operation done under modern aseptic methods, the wonder is that the profession could have been blinded by the prejudices of the past, arising out of the comparative failure of the operation when done without regard to a knowledge of scientific obstetrics or surgery.

The results obtained by Italian operators under the influence of Morisani's teachings took the world by surprise. The fact that the work was being done was well known, but the profession was supercilious and refused to estimate it in a scientific spirit. The old, prejudiced belief that symphysiotomy was necessarily a failure, because it did not permit of an increase in the conjugate diameter of the pelvis, and because it jeopardized the integrity of the pelvic symphyses,

¹ Read before the College of Physicians of Philadelphia, Feb. 1, 1893.



was too firmly grounded to be easily set aside, and it required the demonstration of the safe delivery of thirty women, in Italy, having contracted pelvis of marked type, before any but Italian surgeons were willing to perform the operation.

The old objections to the operation were: 1. That in contracted pelvis, as a rule, the antero-posterior diameter is the shortened diameter; and that this diameter is scarcely, if at all, increased by the operation. 2. That there is great danger of rupture of the sacro-iliac symphyses. 3. That the symphysis pubis would not unite properly; and hence that the powers of locomotion in women subjected to the operation would be greatly lessened. Experience has shown each of these objections to be groundless or much overstated. Undoubtedly the oblique and transverse diameters of the pelvis are increased more than the antero-posterior, but this diameter also is increased. When the pelvic bones are separated from two to two and a half inches, enough room is afforded for the rounded head (perhaps the parietal protuberance) to project into the opening, thus increasing the working space at least half an inch. This increase in space, together with the increase in the oblique diameters, affords the necessary room for delivery, except in cases of very marked deformity.

The objection that the sacro-iliac joints may be ruptured has not been borne out by experience. Nevertheless it should not be forgotten that at times the pelvic joints are ruptured in cases of difficult labor in which symphysiotomy has not been done. This should admonish surgeons to be careful in recommending the operation in cases of marked deformity,

especially if the head of the child seems large and well ossified.

The final objection, that the divided symphysis would not unite, is likewise not well founded, as experience has demonstrated that it unites with pleasing uniformity and facility.

Since January 8, 1886, there have been fifty-seven symphysiotomies, and all the women have recovered, except one. This woman (case of Martino, September 22, 1886) had been in labor several days when operated upon, and died of metro-peritonitis, due to infection of the birth-canal, and not to the operation. This fact justifies the conclusion that in proper cases when done early, and after the antiseptic method, symphysiotomy has no mortality. This is true, however, only under the conditions laid down. The history of the operation admonishes us that when done on improper cases, and without asepsis, its mortality is high.

The complications following the operation have been urethral and vesical fistulæ in a few cases. According to Morisani, these were due to a faulty technique. Not having had the opportunity myself to study the recorded cases of symphysiotomy, to discover accidents resulting from it, I wrote to Dr. Harris, who has recently studied the literature in the preparation of his paper on the subject (*Trans. Amer. Gynecological Society, 1892*). He writes me that since the perfection of the technique, in 1886, there is no case recorded in which the sacro-iliac joints have been injured; no case in which a child has been delivered absolutely dead; and no case in which it was necessary to practise embryotomy to

complete the delivery. Even going back to 1866, in 125 symphysiotomies there is but one case recorded of possible injury to the sacro-iliac joint. This was a case of iliac phlegmon, which is by no means necessarily due to joint-injury.

The results to the children delivered by symphysiotomy have been equally good. No child has been born absolutely dead, but six children out of fifty-seven died shortly after birth.

Having thus disposed of the questions heretofore raised concerning the operation, it remains to consider its true field of usefulness and its relation to Cesarean section, the induction of premature labor, and to embryotomy.

The operation has been done, heretofore, principally in cases of flat pelvis, and the measurements hereafter given refer to that deformity. Other varieties of deformity are rare, but fortunately the operation is even better adapted in them to facilitate delivery, excepting cases of Naegele or Robert pelvis.

The conjugate diameter in the women heretofore operated upon has varied from 66 mm. ($2\frac{5}{8}$ in.) to 97 mm. ($3\frac{1}{8}$ in.). There is a general agreement among surgeons to limit the field of symphysiotomy in flat pelvis to cases having at least $2\frac{3}{4}$ inches in the conjugate diameter. I find myself in agreement with this opinion. My own experience in delivering a child weighing eight pounds and two ounces through a pelvis of $2\frac{3}{4}$ inches has admonished me that less room would entail very great danger of death to the child, and would put more strain on the sacro-iliac joints than would be judicious.

In this field symphysiotomy comes directly into

competition with the Cesarean operation, done for the relative indication. I am convinced of the beneficent nature of the modern Cesarean operation, when done *secundem artem*, and that it has a very low if not a *nil* mortality in the hands of an expert. Nevertheless, it must be acknowledged that the Cesarean operation is a more formidable operation than symphysiotomy, and that its possibilities of morbidity and mortality are undoubtedly greater. Hence I unhesitatingly pronounce in favor of symphysiotomy in this field, and believe that it will soon supplant the Cesarean operation performed for the relative indication. Aside from its absolute claims for preference, there are several relative claims which I believe will prove of great service in practice. The practitioner will not have to overcome a popular prejudice, as is the case with the Cesarean operation. Symphysiotomy is to the public a new operation ; hence the public is prepared to estimate its risks as told by the profession. This is not true of the Cesarean operation, for the modern operation has to bear the evil name of the old operation, and is believed by the public to be almost necessarily fatal. These considerations will render it more easy to gain consent for the performance of symphysiotomy than it has been for the Cesarean section. Another advantage will be that the failure of the natural forces, assisted by art, to accomplish delivery, will prove a convincing argument in favor of the necessity for symphysiotomy. And, happily, the operation can then be done with success, whereas, in the case of the Cesarean operation the favorable time would already have passed by.

Symphiotomy likewise fills the field heretofore occupied by embryotomy done on the living child. Since the perfection of the technique of the Cesarean operation, in common with many others, I have denied the justifiability of embryotomy done on the living child. With the addition of symphysiotomy to scientific obstetrics I believe that the slaughter of the innocents will cease. The old excuse for embryotomy, that it is justifiable to kill the child to save the mother, no longer holds, for both can be saved either by the Cesarean operation or by symphysiotomy. As I have recently discussed this phase of the subject in a paper read before the Philadelphia County Medical Society (*Amer. Journ. of Obstet.*, 1893) entitled "Cesarean Section and its Substitutes," I have only to add that I believe the greatest good which will be accomplished by symphysiotomy will be that it will put a stop to the killing of unborn infants. Courageous and expert surgeons could save both mother and child by the Cesarean operation, but apparently they could not do away with the practice of embryotomy.

Symphiotomy, also, has been performed in the same classes of pelvis in which, heretofore, the induction of premature labor has been practised. Hence these two operations come into competition. This is a phase of the subject which heretofore has attracted no attention. This fact renders it inexpedient to dogmatize at this time. But I believe that symphysiotomy is destined to supplant the induction of premature labor, especially as a hospital operation and in practice among the ignorant and the poor. Embryotomy heretofore has been

employed to terminate arrested labors amongst the poor having deformed pelvis. Such people, as a rule, employ midwives or physicians who do not devote much study to their cases prior to the onset of labor. As a result premature labor is seldom induced among this class in private practice. Symphysiotomy will now supplant embryotomy among them.

In hospital practice the choice of operation will depend on the mortality of the mother and the child under the two operations. The advantages appear to be decidedly on the side of symphysiotomy. The maternal mortality from the induction of premature labor is variously stated by authorities. For example, according to Wyder's statement 5 per cent. of the mothers and 50 per cent. of the children die. Winckel states that of children born at from seven and a half to eight months only 33 per cent. are actually kept alive. Under the use of the incubator at the Leipzig maternity there was an infant-mortality of 18 per cent. in the hospital, and at the Paris Maternité there was a mortality of 30 per cent. It is also well known that the mortality of premature infants among the poor is very high in the first year of infancy, so that Winckel's estimate is probably correct.

In my judgment 5 per cent. is an excessive estimate of the maternal mortality of the induction of premature labor. One per cent., or certainly 2 per cent., should cover the mortality in careful hands.

The showing under symphysiotomy is much better. The maternal mortality is zero, and the fetal mortality is six in fifty-seven, or less than 11 per

cent. The chances of the mature child delivered under symphysiotomy to reach maturity are likewise far greater than those of the immature child delivered about the thirty-fourth week of gestation. This is especially true of the children of the poor.

Among the intelligent and well-to-do, premature labor will probably be elected for a time; but if symphysiotomy continues as successful as it promises, it will supplant the induction of labor even in this class of cases. Intelligent people will not care to run the risk of losing their children from prematurity, or, what is worse, having them suffer from hydrocephalus (which is common in such children), and from various neuroses, if a mature child can be delivered with less risk to the mother under symphysiotomy.

The technique of the operation can be considered conveniently in connection with the report of a case of symphysiotomy which follows.

Mrs. X., the subject of this report, is a small woman, weighing one hundred pounds. She is thirty years of age, and has had five children, the last of which was delivered by symphysiotomy. A complete history of her five labors would be a fairly full consideration of dystocia due to deformity of the pelvis, together with the obstetric procedures used to complete such unnatural labors. The following are the measurements:

Height, 4 feet, 8 inches. A. S. S., 24 cm.; Cr. II., 26 cm.; Tr., 29 cm.; D. B. (ext. conj.), 16.5; C. D., 8.5; C. V. (estimated), 7 cm.

The first child, a boy, was born after a labor of 19 hours' duration. Delivery was accomplished by the forceps, the head being so injured by the vigorous compression and traction employed that

the infant died shortly after birth. The child was not weighed. The second child, a girl, was delivered alive, spontaneously, after a hard labor of 14 hours. She was not weighed, but was so tiny that she was not expected to live. It is safe to say that she did not weigh *more* than five pounds. The third child, a girl, was delivered by Dr. Howard A. Kelly by Cesarean section. She weighed six pounds, fifteen ounces. The fourth child, a girl, I delivered, after the induction of labor at the thirty-sixth week, by a high application of the forceps. The baby weighed five and one-thirty-second pounds. The B. P. of the fetal head was 7.5 cm.; B. T. 6.5. The labor was extremely difficult, lasting 27½ hours. (Vide *Amer. Journ. of Obstet.*, 1890, p. 418).

I met Dr. Kelly in consultation, and concurred in the opinion that Mrs. X.'s third delivery could be accomplished only by craniotomy or the Cesarean operation. Dr. Harris also had expressed the same opinion. Mrs. X. and her husband unhesitatingly elected the Cesarean operation. Even had her medical advisers recommended craniotomy she would have rejected it. This was largely due to the fact that she is a Roman Catholic; but doubtless it was partly owing to the horrible death of a sister (who also had a deformed pelvis) under embryotomy—a combination, I believe, of version, craniotomy, and decapitation. The sister died from loss of blood. The issue of the case demonstrated the wisdom of the advice given, as delivery would clearly have been impossible without diminishing the head of a baby weighing $6\frac{5}{6}$ pounds. This operation met with much unfavorable criticism, part of which was due to ignorance of the exact facts in the case, and to the prejudices arising from so called conservatism, and part of which was due probably to animosity on the part of the critics. After this

lapse of time those who were immediately concerned in the case can look back upon this operation with equanimity. Undoubtedly it had much to do with popularizing the Cesarean operation performed for the relative indication in this country.

Had there been a question as to the available room in this pelvis it would be settled by the fourth labor, in which a premature child, weighing $5\frac{1}{2}$ pounds, was delivered with extreme difficulty. This head was delivered with the bi-temporal diameter engaged, and there was no room to spare. The fit was so tight that I feared it would be impossible to deliver the undiminished head. Yet this fetal diameter measured but 6.5 cm.¹

The fifth labor is the subject of this report. Mrs. X. consulted me when seven months pregnant. I found that already the head was so large that it could not be pressed into the pelvis. Two weeks later this disproportion was evidently greater, and a careful palpation of the child made at this time led me to believe that it was large rather than small. Knowing the deformity of the pelvis, and having a lively recollection of the difficulties encountered at the preceding delivery, I became convinced that it would be wiser to do symphysiotomy at full time than to induce premature labor. I so advised the woman, but asked her to reserve her decision until she had consulted Dr. Parish, who agreed with me in advising symphysiotomy as against the induction of premature labor. So far as I know, this is the first time in which symphysiotomy has been elected over the induction of premature labor.

I opened the symphysis, and delivered by a high application of the forceps, December 5, 1892, at the Kensington Hospital for Women. The cervix being

¹ For a full consideration of the history of this case, *vide Amer. Journ. of Obstet.*, 1890, pp. 237 and 418.

well dilated after a labor of eleven hours, the patient was put in the lithotomy position for operation. The bowels and bladder had been emptied, the lower abdominal, pubic, and pudendal regions cleaned, shaved and disinfected, and the vagina douched. The membranes were now ruptured. It was not considered worth while to try forceps delivery before proceeding with the operation, because the head was free at the superior strait, and clearly too large to engage.

The operation was commenced by making an incision an inch in length in the median line of the abdomen and terminating at the symphysis pubis. This was carried down to and through the muscular and aponeurotic structures. More room was now afforded by detaching the muscle from the pubic bones by cutting transversely with scissors until the left index finger could be passed behind the pubes. The connective tissue back of the pubes is so loose that the finger encountered no resistance, and was easily passed below the pubic arch. The urethra being now depressed and dragged to one side by a catheter in the hands of an assistant, the Galbiati knife was passed along the finger as a guide, and hooked under the symphysis. This was divided by traction on the knife in an upward and forward direction. Much difficulty was encountered, as apparently the ligamentous structures were not abundant, and the knife became wedged between the bones. The symphysiotomy lasted twenty-six minutes. As there was considerable venous oozing, a sponge was packed behind the symphysis and gauze was laid over the wound.

The forceps was now applied, and the baby, a boy, was delivered after an extremely difficult forceps-labor, lasting thirty-seven minutes. This is explained by the fact that the baby weighed $8\frac{1}{2}$ pounds, and that the head measurements were B. P.,

9.5 cm. ; B. T., 9 cm. ; S. O. B. 9.5 cm. After the symphysis was divided the bones separated one-fourth of an inch. After vigorous traction with the Hodge forceps they separated two inches, and the head became well engaged. The Tarnier forceps was now applied, when the head descended into the cavity of the pelvis, and a separation of $2\frac{1}{2}$ inches was obtained. Two assistants now supported the pelvis by pressing on the trochanter upon either side, and drawing upon the ilium of the opposite side. It was interesting to observe that the labor followed the mechanism of the flat pelvis. The head descended semi-flexed, with the occiput to the right ilium and the sinciput to the left ilium, until it began to distend the pelvic floor, when flexion and internal rotation took place. The child was delivered asphyxiated, and required careful attention for ten minutes before it was resuscitated. The use of suspension, head downward, dipping in warm and sprinkling with cold water finally brought it around. The placenta was now delivered, and the vagina and the uterus were douched with sublimate solution, 1: 2000. The sponge was removed from the operation-wound and the hemorrhage found to be controlled. Several silkworm-gut sutures were passed through the skin and muscle in each lip of the wound, which came nicely together. In the meantime the pelvic bones were pressed together by the assistants. A dressing of aristol and gauze was applied over the wound, over this rubber adhesive plaster, and finally a stout binder coming well below the trochanters. The legs also were tied together for some days. The patient was put to bed without shock.

In performing the operation I had the advantage of the counsel of Drs. Harris and Parish, and Drs. Boyd and Parish kindly took charge of the baby.

The operation was witnessed by a number of physicians, among others the venerable Dr. J. G. Allen.

The after-history was absolutely uneventful—a normal puerperium. Tender and abraded nipples interfered with the baby's nursing, which prevented him from thriving for a time; but at the present writing he is fat and well. The extreme asphyxia present at birth probably influenced his nutrition for some weeks.

It was interesting to observe the entire absence of pain in the divided symphysis. I had expected considerable pain from the stretching of tissues, especially below the pubic arch; but the patient expressed herself as being perfectly comfortable.

The after-management of the case was somewhat troublesome, owing to the necessity of using a wide binder to preserve immobility of the pelvic bones. The vulva was washed twice daily with sublimate solution, and well dusted with boric acid. The vagina was douched on alternate days, more especially to assist in the rather troublesome task of keeping the parts clean. This was troublesome, because it was thought best to keep the legs together.

As a matter of convenience, I used two binders. The one next the skin was of two thicknesses of heavy muslin, made with "three tails." The outer one was of canvas. The bandages were secured with safety-pins, and finally when the muslin bandage was dispensed with, straps and buckles were attached to the canvas bandage.

In cleaning the patient the outer binder was unfastened, and also the *lower* tail of the muslin binder. The legs were then separated just enough to permit cleansing the vulva. About every third day it became necessary to apply a clean muslin binder. The patient was rolled on her side, the legs being in apposition, and the pelvis supported, when the soiled binder was removed, and the opportunity

embraced to wash the region of the buttocks. A clean binder was then placed in position, the pelvis well supported, and the patient rolled on her back, when the two binders were fastened. In this way it was possible to keep the patient clean, and at the same time keep the pelvis immobile.

Union of the joint was apparently complete in two weeks. The sutures were removed in six days. Wishing to run no risks of poor union, the patient was kept in bed four weeks, then sent home, and confined to bed for another week. Shortly afterward she was doing the housework for a family of six.

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In the discussion following the reading of the paper Dr. R. P. HARRIS said: Dr. Noble's patient came under my observation May, 1888, when I saw her in consultation with Dr. H. A. Kelly at her own house, and recommended that she should go to the Kensington Hospital for Women, and there be delivered by the Cesarean operation, which was performed a few days later. When she was pregnant for the fifth time I had become convinced of the value of symphysiotomy, and thought it adapted to her case, because of the form and size of her pelvis, and recommended that it should be selected as a preparation for delivery.

Unfortunately for the facility of its extraction, the fetus proved to be a male, and much larger than any of her former children, so that it made a very narrow escape for its life, being deeply cyanosed and difficult of resuscitation. It, however, thrived well during its mother's recovery, which was free from any pelvic pain or uneasiness. No convalescence after parturition could have been more devoid of symptoms indicative of the enlargement to which her pelvis had been subjected; and when I examined her on the twenty-second day I found pubic union firm and solid.

Dr. Noble's case is one of the most interesting on record, because of its historic character, as symphysiotomy was brought into contrast with the improved Cesarean section and with delivery under induced labor in the same subject, and all with entire success to mother and child. I know of no parallel case in my obstetric readings, and of no evidence in contrast that is more to the credit of the recently introduced method of delivery.

Under an improved technique and proper antiseptic precautions, the operation of Sigault has been robbed of all traumatic dangers, and would appear to be devoid of any risk, when regarded from a surgical aspect. Deaths have taken place since the operation was perfected by Prof. Morisani, and no doubt will continue to take place, when women are operated upon *in extremis*; just as deaths follow after delivery by the forceps or in cases in which craniotomy has been performed. What we contend is that the prior condition of a parturient woman is not rendered the more likely to prove fatal by reason of the section and opening of her symphysis to aid delivery.

During the past seven years, four women out of seventy have died, in whose cases delivery was accomplished with the aid of symphysiotomy: one in Naples in 1890; one each in Helsingfors, Russia, and in Paris, in 1892, and one in the United States this year. The Neapolitan woman was in labor for several days when taken to hospital; the shoulder presented and the cord prolapsed; delivery was accomplished by version, and death took place in twelve days from metro-peritonitis. The Helsingfors patient died of heart-disease and other organic complications on the second day. She was forty years old, and in her ninth pregnancy. The Paris case had been in labor three days with her fourth child; the forceps had been applied three times at her own home, and four times in hospital; one of the last, antero-

posteriorly. She died the day after delivery, and a small perforating laceration was found leading from the uterine cavity into Douglas's cul-de-sac. The fourth death was in a woman almost moribund, having a pulse of 150. The children were lost, except in the cardiac case and the fourth that died. Certainly death could not be ascribed to symphysiotomy in any of these cases.

Since September 27, 1872, this operation has been performed ten times in the United States and once in Canada, saving ten women and eight children. One child died in twenty-four hours, from the effect of long-continued pressure upon its head in the lower pelvis, and one in three days, from meningeal hemorrhage: the third has not been reported.

The American operations have been performed, in chronological order, by Prof. Charles Jewett, of Brooklyn; Prof. Barton Cooke Hirst, of Philadelphia; Prof. Anna E. Broonan, of Philadelphia; Prof. Edwin J. Michael, of Baltimore; Dr. Charles P. Noble, of Philadelphia; Dr. J. A. Springle, of Montreal; Dr. Harry McKennan, of Paris, Illinois; Prof. Henry J. Garrigues, of New York; Dr. John Milton Duff, of Pittsburg; Prof. William T. Lusk, and Prof. Henry C. Coe, of New York. In Dr. McKennan's operation, not having a sufficiently strong bistoury, the symphysis was divided by means of a narrow metacarpal saw, guarded by the index finger.

We may arrange the history of symphysiotomy into three periods, viz.: 1777 to 1858; 1866 to 1886, and 1886 onward. In the first period there were over 100 operations; in the second there were 73; and in the third, as far as heard of, there have been 70, of which 36 were in the year 1892, divided as follows: In France, 13; in the United States, 7; Italy, 6; Germany, 5; Russia, 2; Canada, 1; Ireland, 1, and Austria, 1. As Italy had 12 in 1891, it is probable that there were as many as 40 in 1892, as against 12 in 1891.

Some men cannot comprehend my statistics, and are

led to believe that *some* of the unfavorable cases must have been hidden away from those who aided me in their collection, in order that the improvement in results should appear so remarkable. We have only to state that a large proportion of the reports were copied from hospital records, and that many other statements came through correspondence. An examination into the diminished mortality of ovariotomy, the Cesarean section and abdominal hysterectomy will show what marvellous changes have been effected within a few years, in the reduction of the death-rate, under anti-septic management.

It was at one time thought that a Porro-Cesarean section, with the stump treated intra-peritoneally, was almost equivalent to a sentence of death, because only one woman was saved out of the first eleven, and yet 25 operations in order, covering the years 1888, 1889, 1890, 1891, proved fatal to only three women. This week brought me a letter from Prof. Leopold, of Dresden, stating that he had performed the Porro operation eight times without the death of a mother, and that 42 improved Cesarean sections in the Frauenklinik had cost the lives of but four women.

The results of obstetric surgery in the hands of very skilful men are certainly trying to the faith of the casual observer, but they are none the less worthy of credit. Dr. Hubert Riedinger, of Brünn, Austria, was an early operator after the Porro method, having commenced in 1878; and his records show that he has performed 15 sections, saving all of the women and losing but one child.

The late Karl Braun (13), the late August Breisky (8), and Drs. Riedinger (15), and Leopold (8), had collectively 44 Porro operations, and lost but 3 women and 8 children. Such records show the possibility of the operation, but a general hospital report, as of the Maternities of Leipzig, Dresden, and Vienna, is of much more value in the estimation of risks.

If puerperal celio-hysterotomy and celio-hysterectomy have been so largely reduced in their rates of mortality, why should it be regarded as almost incredible that the operation of symphysiotomy, upon women in a *proper condition*, should have no mortality? If what was once regarded as "the murderous operation of *bi-pubiotomy*" has been recently revived in Paris, under Prof. Adolphe Pinard, with the saving of both mother and child, why should we fear the traumatic results of a simple symphysiotomy? In Pinard's case there was a true conjugate of 8.5 c.m., but one sacro-iliac symphysis was ankylosed, and the pelvis was oblique, hence the change of method. This operation originated with Prof. Galbiati, of Naples, who performed it on March 30, 1832, upon a dwarf three and a half feet high, having a one-inch conjugate; the child was dead, the woman died in four days of gangrene of the genitalia and vagina. Ten years later, Dr. Ippolito repeated the operation in Naples, with the same result. Prof. Pinard evidently thought that this operation originated with Dr. Farabeuf, of Paris, who proposed it to him, and he recommended that it be called by his name instead of *ischio-pubiotomy*, by which he reported it before the French Academy of Medicine, on January 10, 1893.

DR. BARTON COOKE HIRST said: Without doubt this operation has now become firmly fixed among justifiable obstetric procedures. There have already been ten operations in this country, and I shall probably add another to-morrow. I have only one remark to make to-night in regard to this matter. After my own operation, which I have already reported, I had a conversation with the President, and received from him a very original and brilliant suggestion. Dr. Mitchell asked me if there were not some way of permanently enlarging the pelvis in the operation of symphysiotomy. It seemed to him that by the insertion of ivory pegs, or by other means, the widening of the pelvis could be main-

tained. This is a brilliant idea, and I had hoped to have had before now the opportunity of trying it upon animals. The proposition is very interesting and deserves careful consideration. The enlargement of the pelvis in symphysiotomy is considerable. A recent German experimenter has examined, post-mortem, the pelvises of three or four women within a few days after delivery, and has found that with a separation of the symphysis to seven centimeters, symphysiotomy gave an increase of three centimeters in the oblique and transverse diameters, and of over one centimeter in the antero-posterior diameter. This enlarges the capacity of the pelvis materially. It would be a brilliant achievement if this could be made permanent by the operation, and if by medical skill we could transform the previous anatomic condition of the patient. It seems almost like sacrilege to think of it. It reminds one of adding a cubit to one's stature, but it seems possible, and I hope soon to have an opportunity of testing Dr. Mitchell's suggestion upon pregnant animals.

